REMARKS

This Amendment is in response to the Office Action mailed October 20, 2008. Applicant respectfully traverses the rejection in its entirety because the rejection is improper and a *prima facie* case of anticipation has not been established. Applicant has amended claims 1, 13, and 17. Reconsideration in light of the amendments and remarks made herein is respectfully requested.

Request for Examiner's Interview

The Examiner is respectfully requested to contact the undersigned attorney if, after review, such claims are still not in condition for allowance. This telephone conference would greatly facilitate the examination of the present application. The undersigned attorney can be reached at the telephone number listed below.

Improper Rejection

As previously stated, Applicant respectfully submits that this Office Action fails to comply with examination guidelines outlined in MPEP §706 and 37 C.F.R. §1.104(c)(2). More specifically, while the Byszewski reference is clearly a complex reference, the Examiner has again failed to clearly explain or even identify the particular teachings of Byszewski that have been applied against each of the limitations set forth in the rejected claims. In fact, thus far, there has been absolutely no discussion by the Examiner as to what specific teachings within Byszewski constitute the claimed limitations set forth in claims 2-21. Similarly, the Examiner merely states that Boateng discloses the claims 17-21 in Figures 1-4.

Applicant believes that the pending claims are in condition for allowance, and unless the Examiner provides a detailed explanation outlining the presence within Byszewski and Boateng of each of the limitations set forth in the pending claims, Applicant respectfully requests the Examiner to reconsider allowance of the pending claims.

Thus, Applicant respectfully requests the Examiner to specifically point out *in the specification* where Byszewski allegedly teaches each and every limitation within ALL of the pending claims.

Rejection Under 35 U.S.C. § 103

Claims 1-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Byszewski (U.S. Patent No. 5,352,345) and claims 17-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Byszewski in view of Boateng (U.S. Patent Number 5,225,054). Applicant respectfully traverses the rejection and submits that the Examiner has not met the burden of establishing a *prima facie* case of obviousness.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all of the claim limitations. *MPEP §2143, p. 2100-126 to 2100-130 (8th Ed., Rev. 5, August 2006).* Applicant respectfully submits that Byszewski fails to describe all of the claim limitations.

1. Claims 1-12

Byszewski fails to disclose: (1) an impurity separation subsystem to remove a selected impurity from a feed water and to produce a reject solution with an elevated level of the selected impurity and an output solution, the output solution being the feed water having a substantially reduced level of the impurity; and (2) an electrolytic membrane separation (EMS) subsystem in fluid communications with the impurity separation subsystem, the EMS subsystem to receive the reject solution from the impurity separation subsystem and an electrically conductive solution, to transfer the selected impurity to the conductive solution, as recited in amended claim 1.

The Examiner alleges that the ion exchanger corresponds to the impurity separation subsystem and the electrodialytic water splitter 428 corresponds to the EMS (Office Action dated 01/11/2009, page 3, as referenced in present Office Action, page 2). Applicant respectfully disagrees.

a) The base depleted regenerant 422 is pretreated to remove impurities such that it cannot correspond to "a reject solution with an elevated level of the selected impurity"

As shown in Figure 5, Byszewski merely discloses fresh anion exchange regenerant being introduced via line 400 into an exhausted anion exchange column, 401. The exhausted regenerant is removed via line 402 and the suspended solids are filtered out via filtration unit, 403, and removed from the system via line 404. The filtered, exhausted anion exchange regenerant is fed into the base purification unit, 409, via line 408. An aqueous solution, preferably water or a base solution, is fed into the base purification compartment, 409, via line 407. The recovered base is withdrawn form the base purification unit via line 410. The base depleted exhausted regenerant is removed from the base purification unit via line 412. A portion of the base depleted exhausted regenerant in line 412 is fed to a pH adjustment unit, 418. Makeup concentrated salt, and HCl/NaOH are optionally added to the pH adjustment unit via lines 416, and 417, respectively to maintain a pH of about 5 to about 6 so that the SiO_2 and Al_20_3 will precipitate. Following pH adjustment in unit 418, the residual regenerant stream travels via line 419 to filtration unit, 420. Insoluble silicates are removed from the system via line 421. The base depleted regenerant is withdrawn from the silicate removal unit and fed into the salt compartment of the electrodialytic water splitter, 428, via line 422 (Byszewski, col. 7, lines 20-62; Figure 5).

Accordingly, as illustrated in Figure 5, the base depleted regenerant 422 which is received by the electrodialytic water splitter 428, allegedly the EMS, is pretreated to remove impurities (Byszewski, col. 6, lines 8-10). More specifically, the suspended solids are filtered out via filtration unit 403, and removed from the system via line 404 and insoluble silicates are filtered out via the filtration unit 420 and removed from the system via line 421. Accordingly, the electrodialytic water splitter 428 receives a base depleted regenerant 422 which already has impurities removed.

In contrast, claim 1 recites: "an impurity separation subsystem to remove a selected impurity from a feed water and to produce a reject solution with an elevated level of the selected impurity and an output solution… the EMS subsystem to receive the reject solution from the impurity separation subsystem…"

Assuming that the ion exchanger is the system in Figure 5 connected to the input of the electrodialytic water splitter 428, the ion exchanger produces a base depleted regenerant 422 which is received by the electrodialytic water splitter 428.

Thus, given that the base depleted regenerant 422 already has impurities removed, the base depleted regenerant 422 cannot be a reject solution with an elevated level of the selected impurity. Accordingly, the ion exchanger fails to produce a reject solution with an elevated level of the selected impurity and the electrodialytic water splitter 428 fails to receive the reject solution. Therefore, the ion exchanger and the electrodialytic water splitter 428 cannot correspond to the impurity separation subsystem and the EMS, as recited in claim 1.

b) The base depleted regenerant 422 cannot correspond to "a reject solution with an elevated level of the selected impurity"

Applicants note that the anions combine with hydrogen ions to form acid and that cations form base with hydroxide ions (Byszewski, col. 4, lines 5-13l Figure 1). However, even assuming that the anions and cations correspond to "selected impurities", as recited in the claim, the base depleted regenerant 422 does not include an elevated level of the selected impurity (i.e., cation) since, in the ion exchanger portion of Figure 5, "the filtered, exhausted anion exchange regenerant is fed into the base purification unit, 409, via line 408.... The recovered base is withdrawn from the base purification unit via line 410. The base depleted exhausted regenerant is removed from the base purification unit via line 412." (Byszewski, col. 7, lines 27-33; Figure 5). *Emphasis Added.*

Accordingly, the based depleted regenerant that is produced by the ion exchanger and received by the electrodialytic water splitter 428 is base depleted since the recovered based is withdrawn via line 410. Therefore, the base depleted exhausted regenerant 422 has a decreased level of the selected impurity, allegedly the cation, rather than an elevated level, as delineated in the claim. Hence, it appears that Byszewski teaches away from the claimed invention.

In the Office Action, the Examiner states that "the Board of Patent Appeals and Interferences... stated a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus

satisfying the structural limitations of the claimed. The device does not undergo a metamorphosis to a new apparatus merely by affixing instructions thereto on the use" (Office Action, page 3).

Applicant respectfully submits this statement by the Board does not apply in the present case since the claimed apparatus in Byszewski fails to satisfy "the structural limitations of the claimed" as delineated herein. In other words, Byszewski fails to teach each of the elements as recited in the claims.

Thus, the base depleted exhausted regenerant 422 cannot be the reject solution as recited in claim 1.

c) The recovered base 410 cannot correspond to "the output solution being the feed water having a substantially reduced level of the impurity"

As shown in Figure 5, the ion exchanger portion of the system produces the base depleted exhausted regenerant at line 412 and the recovered base at line 410 (Byszewski, col. 7, lines 27-33; Figure 5).

In contrast, the claim recites "an impurity separation subsystem to remove a selected impurity from a feed water and to produce a reject solution with an elevated level of the selected impurity and an output solution, the output solution being the feed water having a substantially reduced level of the impurity". *Emphasis Added.* As discussed above, the Examiner alleges that base depleted exhausted regenerant 412. Accordingly, the Examiner must be alleging that the recovered base corresponds to the output solution. Applicant respectfully disagrees.

The base purification unit 409 receives an aqueous solution, preferably water or a base solution, and the recovered base 410 is withdrawn from the base purification unit. There is no teaching or suggestion that the recovered base is the aqueous solution having a substantially reduced level of impurity, allegedly cations. In fact, since the base purification unit 409 further receives the filtered exhausted anion exchange regenerant 408 and produces the base depleted exhausted regenerant 412, it is likely that the recovered base 410 includes the base that was depleted from the base depleted exhausted regenerant 412. Thus, the recovered base 410 cannot be the aqueous solution 407 having a substantially reduced level of impurity.

Moreover, Applicant respectfully submits that Byszewski does not describe or suggest the limitations set forth in dependent claims 2-12. However, based on the dependency of claims 2-12 on claim 1 believed by Applicant to be in condition for allowance, no further discussion as to the grounds for traverse is warranted.

Hence, Applicant respectfully requests that the Examiner to withdraw the outstanding §103 rejection as applied to independent claim 1.

2. *Claims 13-16*

With respect to independent claim 13, Byszewski fails to disclose at least "receive a brine solution… having an elevated level of at least one type of impurity" and "produce a resultant brine solution that may be reused for regeneration of an ion exchange resin", as recited in claim 13.

Byszewski merely discloses the electrodialytic water splitter 428, allegedly the EMS, receiving the base depleted regenerant 422. Aqueous solutions, preferably water, dilute or recycled acid or base are fed respectively into the acid and base compartments via lines 423 and 424. The base depleted regenerant solution is split into its acid and base components in the electrodialytic water splitter, 428. The recovered acid is withdrawn via line 429. Base is recovered from electrodialytic water splitter, 428, via line 434. The electrodialytically depleted salt may be withdrawn from the electrodialytic water splitter, 428, via line 433 (Byszewski, col. 7, line 54 to col. 8, line 15; Figure 5).

As discussed above, the base depleted regenerant 422 is (1) pretreated to remove impurities and (2) even assuming that cations are impurities, is base depleated such that base depleted regenerant 422 cannot correspond to the brine solution having an elevated level of at least one type of impurity.

Additionally, assuming that the base depleted regenerant 422 is the brine solution, Byszewski fails to teach or suggest "produce a resultant brine solution that may be reused for regeneration of an ion exchange resin." Instead, electrodialytic water splitter, 428, allegedly the EMS, merely produces an electrodialytically depleted salt, and the recovered acid and base,

which allegedly contain the impurities (cations and anions). Given that the base depleted regenerant 422 is assumed to be the brine solution, the electrodialytically depleted salt cannot be the resultant brine solution.

Moreover, the electrodialytically depleted salt is either discarded, or treated to recover excess water (Byszewski, col. 8, lines 15-17; Figure 5). Thus, the electrodialytically depleted salt is not being "reused for regeneration of an ion exchange resin" such that it cannot be resultant brine solution.

Based on the dependency of claims 14-16 on claim 13 believed by Applicant to be in condition for allowance, no further discussion as to the grounds for traverse is warranted. Hence, Applicant respectfully submits that the Examiner withdraw the outstanding §103(a) rejection as applied to independent claim 13 and claims 14-16 dependent thereon.

3. Claims 17-21

Similarly, with respect to independent claim 17, Byszewski fails to teach "a brine solution having… an increased level of an impurity".

As discussed above, the base depleted regenerant 422 is (1) pretreated to remove impurities and (2) even assuming that cations are impurities, is base depleated such that base depleted regenerant 422 cannot correspond to the brine solution having an increased level of at least one type of impurity.

Based on the dependency of claims 18-21 on claim 17 believed by Applicant to be in condition for allowance, no further discussion as to the grounds for traverse is warranted. Hence, Applicant respectfully submits that the Examiner withdraw the outstanding §103(a) rejection as applied to independent claim 17 and claims 18-21 dependent thereon.

Conclusion

Applicant reserves all rights with respect to the applicability of the doctrine of equivalents. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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